Request for Determination of Insignificance
Under the Interbasin Transfer Act
MGL Chapter 21 Sections 8B - 8D

Town of Hopkinton Water Purchase

WRC DECISION
4 November 1999

On November 4, 1999 the Massachusetts Water Resources Commission (WRC) voted unanimously that the town of Hopkinton's proposal to transfer 0.0565 million gallons per day (mgd) from a source located in Ashland, in the Concord River basin to areas of Hopkinton in the Charles and Blackstone River basin, was insignificant under the Interbasin Transfer Act (M.G.L. Chapter 21 §§ 8B-8D).

WRC Decision

The WRC discussed the merits of this proposal at its October 14, 1999 meeting. At the November 4, 1999 meeting, the WRC unanimously found that Hopkinton's proposal to transfer 0.0565 mgd from the Concord River basin to the Charles and Blackstone River basins is insignificant for purposes of the Interbasin Transfer Act. An issue of concern was potential impacts from withdrawal of the portion of the 1 mgd water purchase not subject to the Act. The WRC therefore asked that the Water Management Act permit process consider and address any impacts to the Hopkinton Reservoir and other resources from the approximately 1 mgd Hopkinton purchase from Ashland, most of which stays in basin but which may affect the flood control, environmental and recreational purposes of the reservoir. The WRC also requested that DEM include these concerns in its dam management plan.

Background

On September 4, 1999, the WRC received a Request for Determination of Insignificance under the Interbasin Transfer Act from Hopkinton. Hopkinton is proposing to purchase up to 1 mgd of water from a new source being developed by the Town of Ashland, adjacent to the Hopkinton Reservoir. Water will be transmitted directly to Hopkinton from the proposed filtration plant. There will be a 695 gpm (1 mgd) pump dedicated for Hopkinton's use which will limit the transfer of water to Hopkinton.

Hopkinton has land area in the Concord River basin, the Charles River basin and the Blackstone River basin (Figure 1). The Town is mostly sewered to the Westborough wastewater treatment facility in the Concord River basin, however, a small portion of town in the Blackstone and Charles River basins is not sewered. Wastewater is discharged via on-site septic systems in these areas. The WRC Decision addresses this portion of the water purchase, estimated to be 56,500 gallons per day (gpd).

As required by 313 CMR 4.04(b) notice of receipt of this request was first published in the Environmental Monitor on September 25, 1998. An additional notice announcing the revised dates for WRC discussion was published on September 8, 1999.

Staff Analysis

Hopkinton's Request for Determination of Insignificance was reviewed by staff from the Department of Environmental Management, the Department of Environmental Protection, the Division of Fisheries and Wildlife and the Riverways Program against the criteria for insignificance listed in the Interbasin Transfer Act regulations, 313 CMR 4.04(4).

Synopsis of Criteria for Insignificance

Criterion	Hopkinton's Application
(a) Is not over 1 mgd	Meets
(b) Is less than 1 mgd on an annualized basis and is temporary, of short duration and for a purpose other than water supply use	Not Applicable
(c) Additional flow is less than 5% of the instantaneous flow	Meets
(d) The 95% exceedance flow will not be diminished	Meets
(e) Special resource values will not be adversely affected	Meets
(f) The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows in the donor basin	Meets

A description of how the application addressed these criteria is found in Attachment 1.

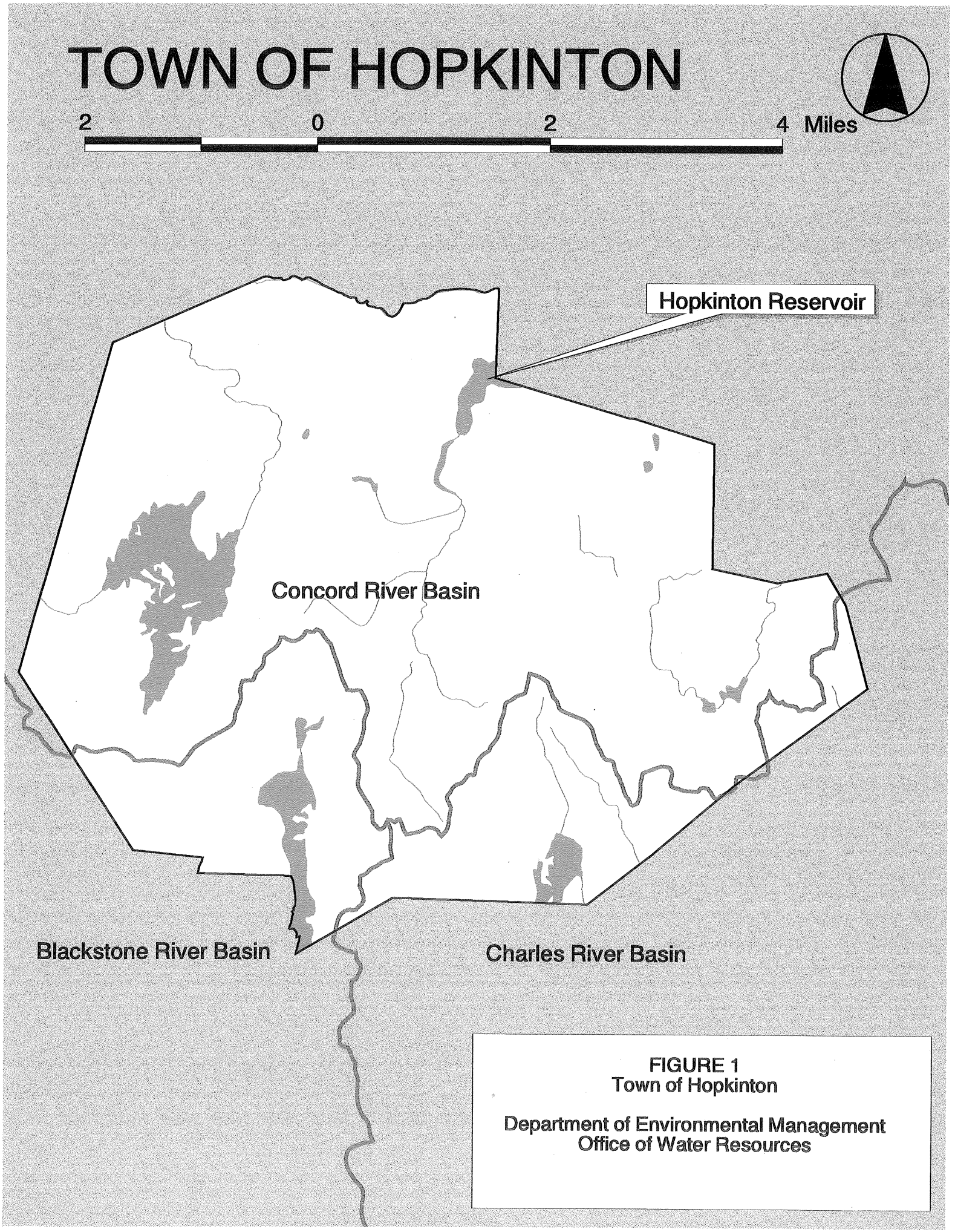


FIGURE 1
Town of Hopkinton

Department of Environmental Management
Office of Water Resources

In order to determine whether the proposed transfer is insignificant, the portion of Hopkinton's withdrawal that will be discharged out of basin was evaluated against the criteria listed above. The two hydrologic criteria (c and d) reflect streamflow concerns. These were analyzed based on the downstream release which can be maintained by the impoundment. The proposed Interbasin Transfer could impact the levels in the Hopkinton Reservoir and diminish the releases to Indian Brook below the Hopkinton Dam. Therefore, the proponent was directed to evaluate the impact of the proposed Interbasin Transfer on the level of the reservoir for five release scenarios to Indian Brook. DEM staff defined the release scenarios as (1) 0.15 cubic feet per square mile (cfsm) or 0.94 cubic feet per second (cfs), (2) 0.20 cfsm or 1.26 cfs, (3) 0.30 cfsm or 1.88 cfs, (4) 0.40 cfsm or 2.51 cfs, and (5) 0.50 cfsm or 3.14 cfs.

The proponent developed a spreadsheet stage and discharge model of the Hopkinton reservoir between 1941 and 1996 with the following guidelines:

- The reservoir is maintained at a maximum elevation of 292.35 feet NGVD from September to May and 296.35 feet NGVD from June to August, which correspond to flood control levels.
- The current withdrawals were modeled using the historic monthly average withdrawals from the Howe Street wellfield depicted in the first column of **Table 1**.
- The proposed withdrawals were modeled using the sum of historic monthly average withdrawals from the Howe Street wellfield and the maximum Interbasin Transfer of 0.0565 mgd depicted in the third column of **Table 1**.

TABLE 1 Current and Proposed withdrawals from the Howe Street wellfield

Month	Current Average Monthly withdrawals (MGD)	Maximum Increase due to IBT (MGD)	Proposed withdrawals (MGD)
January	1.23	0.0565	1.29
February	1.11	0.0565	1.17
March	1.16	0.0565	1.22
April	1.39	0.0565	1.45
May	1.74	0.0565	1.80
June	2.32	0.0565	2.38
July	2.23	0.0565	2.29
August	1.75	0.0565	1.81
September	1.59	0.0565	1.55
October	1.46	0.0565	1.52
November	1.40	0.0565	1.46
December	1.34	0.0565	1.40
Average	**1.56**	**0.0565**	**1.62**

Staff for the WRC simulated the impacts of the current and proposed withdrawals under the moderate drought conditions of the 1980s. Under these conditions, the reduction in reservoir stage due to the proposed Hopkinton out of basin transfer of 0.0565 mgd for releases up to 0.50 cfsm would be under one inch. In most cases, measurable stage reductions would not occur. The reduction in reservoir stage for each release scenario is depicted in **Table 2** and **Figure 2**.

Table 2 Simulated Number of Months per Stage Reduction due to the Proposed Hopkinton IBT for each Release Scenario between October 1979 and December 1981

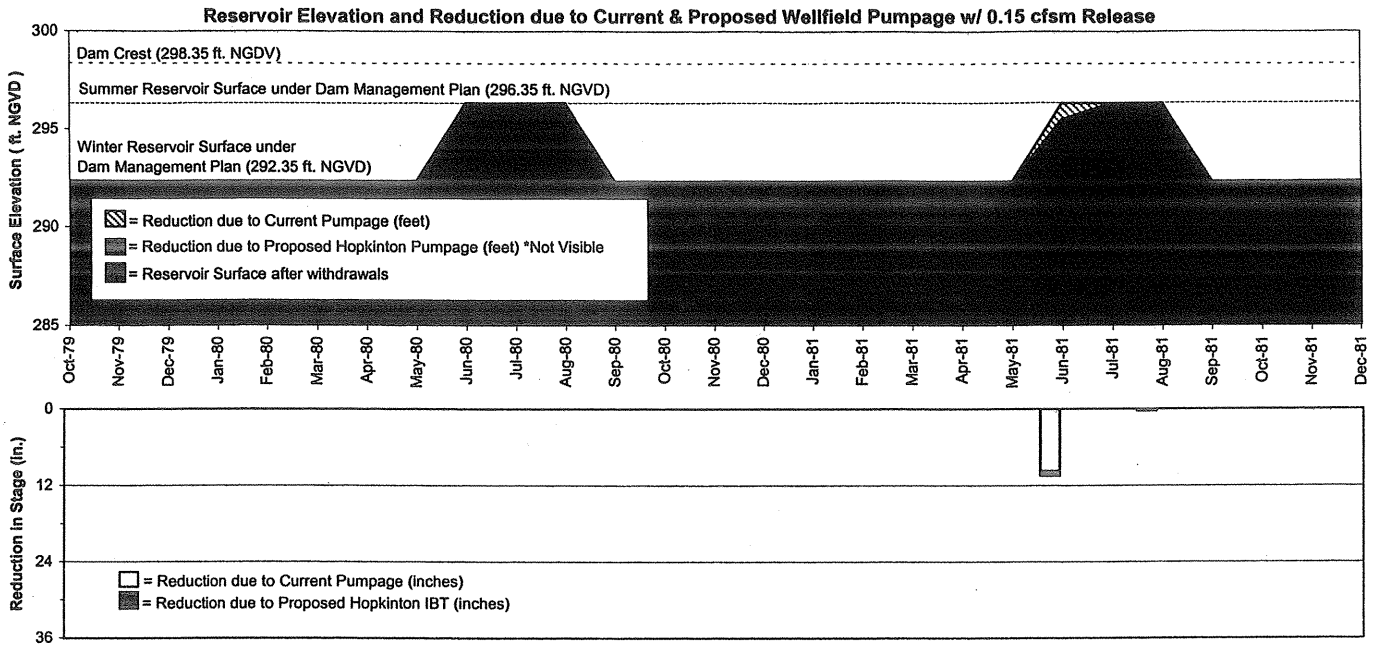
Stage Reduction	0.15 cfsm	0.20 cfsm	0.30 cfsm	0.40 cfsm	0.50 cfsm
None	25	25	24	24	23
0 to 1 inches	2	2	3	3	4
1 to 2 inches					
2 to 3 inches					
3 to 4 inches					
4 to 5 inches					
Total	27	27	27	27	27

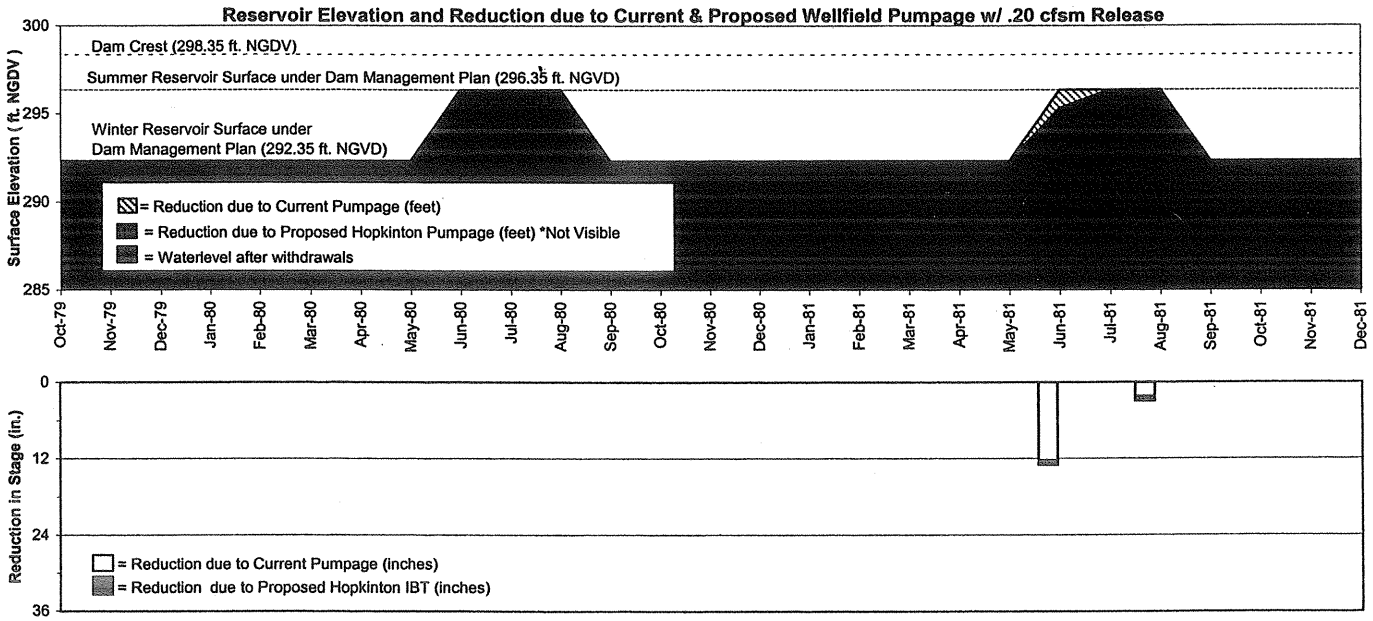
The impacts of the proposed Interbasin Transfer of 0.0565 mgd on both reservoir stage and streamflow were compared to Criteria (c) and (d) of the Interbasin Transfer Regulations for determining insignificance. These hydrologic criteria were evaluated using the downstream release which can be maintained with no significant impact to the elevations and functions of the reservoir.

(c) That the additional flow to be withdrawn is in all cases less than five percent (5%) of the instantaneous flow as measured at an appropriate point of the donor river or tributary thereto.

The nearest continuous stream gage is the Saxonville gage in Framingham located on the Sudbury River. The lowest daily flow measured at this gage is 5.6 cfs. The drainage area at Saxonville is 106 square miles, which means the flow is equivalent to 0.05 cfsm. This site is a significant distance downstream of the reservoir, therefore DEM staff estimated the lowest streamflow at two other sites close to the reservoir using regression equations developed by the U.S. Geological Survey: (1) the Sudbury River in Ashland and (2) the Indian River downstream of the reservoir. The Sudbury River site in Ashland has a drainage area of 35.2 square miles and the Indian River site has a drainage area of 6.78 square miles. The 99% flow duration, which can be used to approximate the lowest daily flow at these sites, is estimated to be 0.19 cfs at Indian River and 2.33 cfs on the Sudbury River. These flows are equivalent to 0.03

FIGURE 2 - Reservoir Elevation and Reduction in Stage for Five Release Scenarios - 1





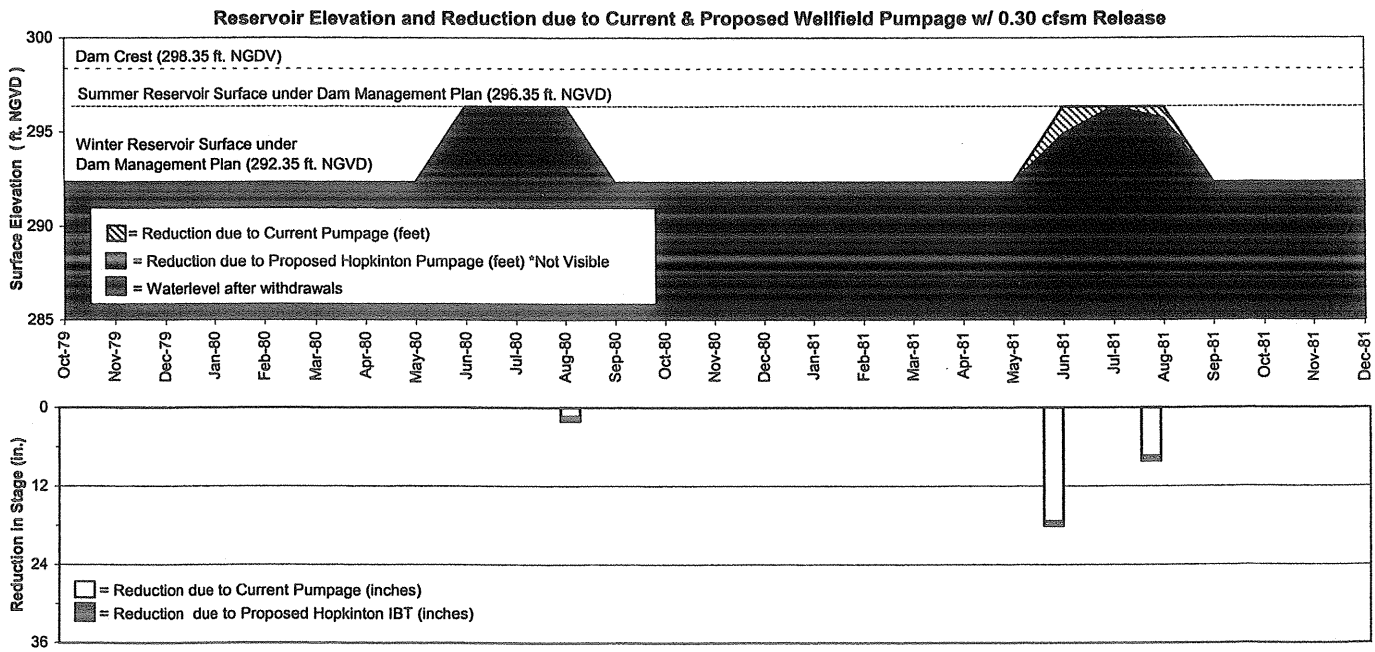
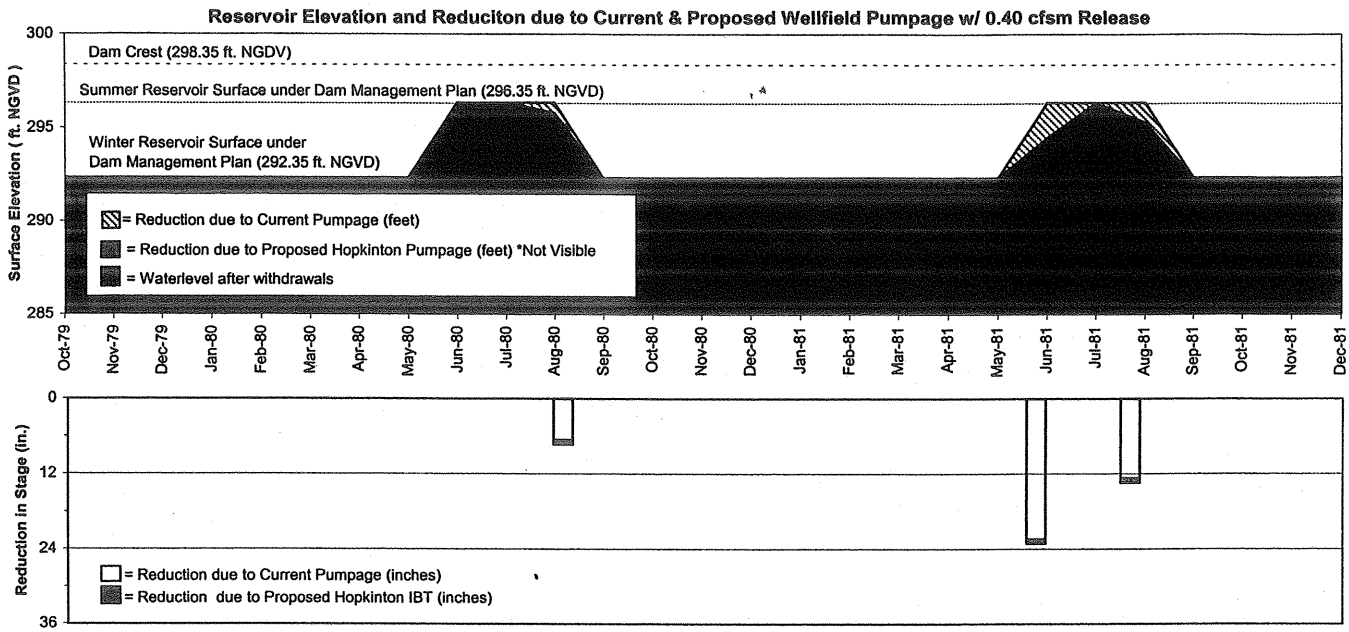
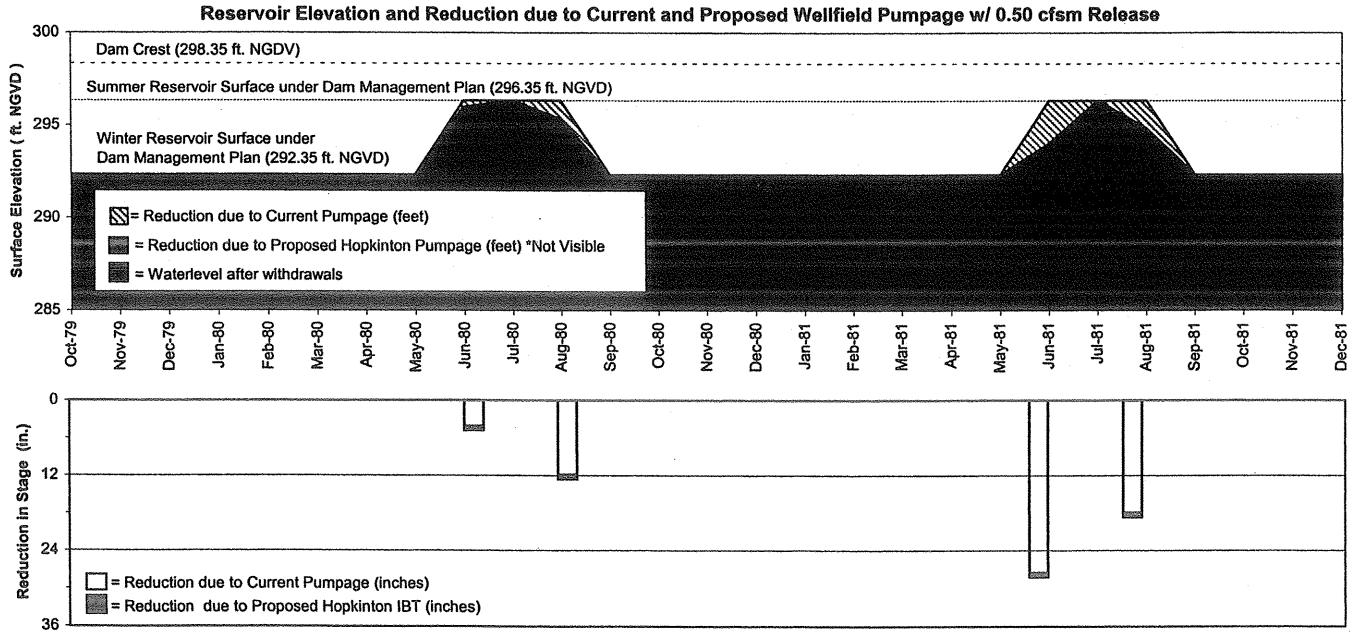


FIGURE 2 - Reservoir Elevation and Reduction in Stage for Five Release Scenarios - 2





cfsm and 0.07 cfsm, respectively. Because the proposed project can maintain a flow release of at least 0.15 cfsm with minimal changes to the reservoir elevation, there will be no measurable reduction in the instantaneous flow.

(d) That the ninety-five percent (95%) exceedance flow, or the 7Q10 flow when relied upon in a program of pollution abatement, will not be diminished.

There are three permitted wastewater discharges on the Concord River downstream of the Hopkinton Reservoir. The discharges are all located a significant distance from the reservoir and have 170 to 330 square miles of drainage area contributing to the discharge locations, as compared to 6.32 square miles at the reservoir site. The 7Q10 flows listed in the permitted discharges are approximately 0.08 cfsm. Due to the ability of this project to maintain a release of a least 0.15 cfsm from the impoundment and the large distance between the discharges and the withdrawal there will be no measurable impact to the 7Q10 flows at the discharge locations.

Analyses indicate that the above two hydrologic criteria can be met by releases from the reservoir under the proposed operations. Modeling results presented by the proponent indicate that the reservoir elevations would not change significantly under proposed operations.

Attachment 1
Request for Determination of Insignificance
Town of Hopkinton
Water Purchase from the Town of Ashland

Criterion	Proposal Meets	Explanation
(a) Is not over 1 mgd	Yes	Total purchase will be 1 mgd. Only a portion of this, 0.056 mgd, will be transferred out of basin
(b) Is less than 1mgd on an annualized basis and is temporary, of short duration and for a purpose other than water supply use)	Not Applicable	Proposal is long-term for water supply purposes
(c) Additional flow is less than 5% of the instantaneous flow	Yes	The proposed project can maintain a flow release of at least 0.15 cfsm, therefore there will be no reduction in the instantaneous flow.
(d) The 95% exceedance flow will not be diminished	Yes	There are four permitted wastewater discharges on the Sudbury and Concord Rivers downstream of the Hopkinton Reservoir. The 7Q10 flows listed in the permitted discharges are approximately 0.08 cfsm. The proposed project can maintain a flow release of at least 0.15 cfsm, therefore there will be no reduction in the 7Q10 flow.
(e) Special resource values will not be adversely affected	Yes	There are no ACECs in the project area. Because the proposed project can maintain a flow release of at least 0.15 cfsm, Hopkinton's transfer will not impact any designated scenic rivers. No rare or endangered species have been identified in the project area. Hopkinton's transfer will not adversely impact any Article 97 areas.
(f) The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows in the donor basin	Yes	This project does not cause concern with respect to cumulative transfers out of basin. However, this should not be interpreted to mean that the entire project will have no cumulative impacts. Ashland's transfer must be evaluated against this criterion on its own merits.